

# MSC Guidelines for Review of Gas Carrier General Arrangements

Procedure Number: T1-29

Revision Date: 01/31/00

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## References

- a. 46 CFR Subchapter D
- b. 46 CFR, Subchapter I
- c. 46 CFR, Subchapter O
- d. IGC Code, International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
- e. International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1978 (SOLAS), as amended

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## Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

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## Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone. Please refer to the Procedure Number: **T1-29**

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## General Review Guidance

- ❑ If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, no plan review will occur until receipt of a copy of the Application.
- ❑ Is it clearly stated what is desired from the MSC? Are all plans requiring Coast Guard review and/or approval submitted in triplicate? Are there any special or unusual requests involved?
- ❑ The majority of gas carrier reviews involve unmanned tank barges and independent pressure vessel barges regulated under a dual Subchapter O/D certification not engaged on international voyages. Determine applicability of regulations per 46 CFR 151.01-10, as follows:

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- ❑ For **unmanned** barges only, if cargo is listed in 46 CFR Table 151.05 and **has** flammability or combustibility characteristics as indicated by a fire protection requirement in the table, then Subchapters O and D apply.
- ❑ For **unmanned** barges only, if cargo is listed in 46 CFR Table 151.05 and **does not have** flammability or combustibility characteristics as indicated by a fire protection requirement in the table, then Subchapters O and D or O and I apply. The option for applying D or I, in addition to O, should be indicated by the owner on the Application for Inspection.
- ❑ Per 46 CFR 151.01-10(e), **manned** barges which carry a cargo listed in Table 151.05 will be considered individually by Commandant (G-MSO-2) for applicable regulations and design requirements.
- ❑ If the vessel is a self-propelled tankship, consult 46 CFR, Subchapter O, Parts 153 and 154. Compliance with references (d) and (e) should also be verified, as applicable for international routes.
- ❑ Per 46 CFR 38.05-1 and 46 CFR 151.15-3(d)), a minimum of hull type II is required for gas barges. A type I hull may be required depending on appropriate hazard of cargo. The required protective voids are as follows:
  - ❑ Type I:           4' side and box end void  
                      25' rake bulkhead for lead barges  
                      15" bottom inspection clearance
  - ❑ Type II:           3' side and box end void  
                      25' rake bulkhead for lead barges  
                      15" bottom inspection clearance
- ❑ Design and construction standards of 46 CFR, 38.05-1:
  - ❑ (b) Access and ventilation intakes arranged to prevent flow of cargo vapor from the weather deck, openings adjacent to cargo area at least 24 inches above cargo handling deck
  - ❑ (e) Compartments containing cargo tanks or pipes accessible from the weather deck only. No openings from these compartments to other parts of the vessel permitted

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- ❑ Per 38.05-1(d) & 32.60-10:
  - ❑ cargo tank spaces must be isolated from the remainder of the vessel by cofferdams in accordance with 32.60-10
  - ❑ no access from cargo tanks to enclosed spaces, 32.60-10(c)(2)
  - ❑ ventilation required for stowage purposes in enclosed spaces, 32.60-10(d)
- ❑ Design and construction of nonpressure vessel type cargo tanks, 46 CFR 38.05-4; secondary barriers required where leakage from primary barrier results in unsafe temperature reduction in vessel structures
- ❑ Per 38.05-10(e), clearances of 24 inches from the side and 15 inches from the bottom around independent containment systems (in addition to the required protective voids)
  - ❑ For pressure vessel designs, distance between tanks and between the hull and tanks must allow inspection of all hull and tank surfaces
  - ❑ For non-pressure vessel type containment systems, access shall be arranged to permit inspection of one side of each of the primary tank and secondary barrier
  - ❑ Weathertightness of the deck must be maintained for designs with protruding tanks, except for vessel on restricted/protected routes, and open hopper type barges of acceptable design (38.05-10(g)(3))
- ❑ Per 38.05-10(a)(2), cargo tanks installed in barges shall comply with the requirements of 32.63-25:
  - ❑ Verify tanks meet the minimum requirements for collision protection, 32.63-25 (b)(1) & (2).
- ❑ Per 46 CFR 38.05-10(g), for pressure vessel type cargo tanks:
  - ❑ Location restrictions
  - ❑ Gastight and watertight penetrations of the weather deck, where liquified flammable gas tanks installed in cargo tanks
  - ❑ Weathertightness of penetrations above the weather deck, where installed in nontank hull spaces
- ❑ All spaces divided into tight compartments, per 46 CFR 32.60-5
- ❑ Tank spaces extended to the main deck with hatches and vents extended to the weather deck, per 46 CFR 32.60-10

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- ❑ Any installed pump room must be isolated from vapor sources, per 46 CFR 32.60-20.
- ❑ For an oceangoing barge, verify compliance with 33 CFR and 46 CFR Subchapter O. A double bottom shall be fitted in accordance with 33 CFR 157.10d(c)(2).
- ❑ Manned gas barges are not typical designs, and require special attention by Commandant on an individual basis to determine applicable regulations and design requirements, per 46 CFR 151.01-10(e). Requirements for construction standards and accommodations in tankship gas carriers, from 46 CFR 153, may be used in these cases (e.g. access restrictions in 153.201, tank separation requirements in 153.233, etc). Other accommodation standards contained in 46 CFR, Subchapters D and/or I may also be applied (e.g. means of escape in 32.02-1, berthing requirements of 32.40-20(b), etc). In general, consult with G-MOC-2 and G-MSO-2 to determine applicability and design requirements for manned gas barges.
- ❑ Guardrails and bulwarks: Guardrails shall be constructed in accordance with 46 CFR 32.01-10 or 46 CFR 92.25. The height of rails and bulwarks shall be at least 39.5 inches.
- ❑ For open hopper barges, evaluate coaming height requirements. A 36 inch, (may be graduated to 24 inch at midlength and 18 inch thereafter) minimum height plowshare breakwater on the forward rake is required, unless demonstrating to the Commandant that protection is sufficient without the plowshare, per 46 CFR 151.10-20 (2)
- ❑ No stowage of dangerous cargoes per 46 CFR 38.01-2(a)(9)
- ❑ Tank access openings located above the maximum liquid level and as close to the top of the tank as possible, sized at least 15 x 18 inches, per 46 CFR 151.15-3(d)(3) and 38.05-2(f)
- ❑ Inspection clearances in the area between tanks or between a tank and the vessel's shell shall not be less than 15 inches, per 46 CFR 151.15-3(d)(2).